Rear Admiral William D. Rodriguez
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Space and Naval Warfare Systems Command
Talks about FORCEnet Development

The Space and Naval Warfare Systems Command is the chief engineer for delivering FORCEnet capabilities. To accomplish this goal the FORCEnet Innovation and Experimentation Framework was established to institutionalize and streamline technology discovery, establish a transition process and identify a funding structure to accelerate fielding and sustainment.

FORCEnet is the Naval net-centric warfare operational construct and architectural framework for integrating warriors, sensors, networks, command and control, platforms and weapons into a networked, distributed force, scalable across the spectrum of conflict from seabed to space, from sea to land. The technical vision for FORCEnet is to provide a networked architecture that will allow integrated system-like capabilities to be quickly composed in response to requirements, challenges and demands of the dynamic current and future operational situation.

CHIPS asked Rear Adm. Rodriguez for an update on FORCEnet development just days before the FORCEnet Engineering Conference, which is planned for June 28-30, 2005, in Norfolk, Va. The purpose of the conference is to promote a collaborative environment for key engineering communities to identify and address challenges and issues that impact the successful transformation of the Naval enterprise to FORCEnet.

CHIPS: Where does the Navy stand in developing FORCEnet architecture?

Rear Adm. Rodriguez: FORCEnet is not just an architecture per se, it's actually an architectural framework coupled with an operational construct. So, while we have many of the elements needed for traditional architectures, things like defined "mission threads" detailing a particular set of system interactions required to acquire and engage a contact, FORCEnet will continue to evolve over time and these products will change as technology changes.

That said, there are particular documents now available for guidance to systems developers. The FORCEnet Architecture Volumes 1 and 2 have been published as have the initial operational views, and supplemental guidance has been published by various program executive officers for the programs under their control.

We continue to work with the cross-service architecture groups and other related forums as we further refine these evolving products.

CHIPS: What are some of the challenges you have in implementing FORCEnet?

Rear Adm. Rodriguez: I really see two challenges, one is organizational and the other is technical. The major organizational challenges are cultural and funding which go hand in hand, such as, how do you change your way of doing business to fund future improvements? For instance, do you decommission aircraft carriers to fund network improvements? Do you maintain legacy business applications while building new ones?

The major technical challenge is maintaining legacy architectures while defining future architectures and migrating to them. Synchronizing the integration of our existing systems into joint architectures while ensuring we remain connected with our allies and coalition partners continues to be one of our biggest priorities. Additionally, we are in a process of developing an integrated road map for both tactical and non-tactical networks.

CHIPS: What direction will FORCEnet take to ensure that Navy information technology (IT) keeps up with rapidly changing requirements?

Rear Adm. Rodriguez: In the IT business, one of the roads to getting capability out there faster is to rely on the commercial marketplace to drive the solutions. Senior leadership in the Navy has directed that the government should not be in the integration business; it is best left to industry.

Having a consistent architecture and defined process on which to build programs will facilitate speed to implementation. Therefore, FORCEnet, at its core, is a prime enabler to shorten the cycle time from need identification to solution implementation.

CHIPS: How does FORCEnet interface with the Global Information Grid (GIG)?

Rear Adm. Rodriguez: FORCEnet is the Navy's instantiation of the Department of Defense (DoD) GIG. A simple analogy that illustrates the way the Navy sees this and its role in the GIG architecture development is GIG initiatives like GIG Bandwidth Expansion, which could be compared to the national interstate highway system.

The federal government builds the interstate highway system in coordination with the states, while the states build roads that connect to the interstate highway system. All users of this highway system

> **"FORCEnet is about transforming information and knowledge into decisive effects for anyone, anytime, anyplace – securely!"**
>
> **– Rear Adm. William D. Rodriguez**

employ the same traffic signals and signs for interoperability.

FORCEnet builds the Navy's roads to the GIG interstate using common standards and interoperability, such as the Joint Technical Architecture. Instead of developing our own architectures and standards from the ground up, the Navy is participating fully in DoD's architecture and standards development process to ensure interoperability.

CHIPS: What is meant by the term "composeability?"

Rear Adm. Rodriguez: Composeability enables Navy IT to deliver tailored information to the warfighter supporting Sea Power 21 and the need for a flexible and agile "FORCE." It allows for the composition of tactics, doctrine, techniques and procedures at all warfighting levels.

FORCEnet composeability provides a means to allow system-like capabilities to be constructed in response to requirements, challenges and demands during dynamic operational situations. FORCEnet brings together modern information technologies, business logic, architectures, standards and protocols to achieve this new level of required responsiveness. This approach provides flexible and dynamic functionality and allows interoperability across naval, joint, allied and coalition components.

CHIPS: What tools will be supporting the FORCEnet Engineering Process to implement the Naval transformation to a net-centric operation? How are these tools managed from a Naval enterprise level?

Rear Adm. Rodriguez: The FORCEnet Implementation Toolset (FIT) will exploit the Naval Collaborative Engineering Environment (NCEE) to implement FORCEnet system engineering practices. As part of the system engineering effort, FIT provides the mechanism for enterprise tools: requirements management and governance.

This supports the FORCEnet Implementation Process and related processes to better utilize the existing infrastructure of data resources.

FIT provides the capability to collect and manage enterprise requirements for tools from all stakeholders in the Naval enterprise. FIT will match requirements to the existing tools for portfolio management for reuse, build and buy decisions.

CHIPS: Is FIT a set of guidelines or engineering techniques; can you provide an example? Is FIT a tool just available to SPAWAR or will all commands working on FORCEnet have this capability?

Rear Adm. Rodriguez: We're fairly early in the development of this toolset. We put together a beta version for initial testing and further refinement from those populating the data fields, and we've been working to make the tool more user-friendly while providing greater availability.

Of course, sensitive data must be protected, so we are working protection and permission issues as well. As FORCEnet matures, we anticipate a matching maturity of the NCEE and associated data structures.

CHIPS: How are you ensuring that FORCEnet delivers improved warfighting effectiveness?

Rear Adm. Rodriguez: FORCEnet provides much needed capability to our ultimate customer — the warfighter. We have included human systems integration in every FORCEnet product and process: assessment, experimentation, architecture and concepts. A major portion of our Trident Warrior experiment includes the impact on warfighting effectiveness (such as shared situational awareness) measured across a mission area.

CHIPS: Business systems are now included in FORCEnet. When did FORCEnet start including business processes under its umbrella?

Rear Adm. Rodriguez: FORCEnet has included business systems from the start. Initial emphasis was on the systems and infrastructure that support the warfighter directly. A large part of the Navy's IT costs is associated with business systems, and business IT supports the warfighter as critically as tactical systems.

The Navy Marine Corps Intranet (NMCI) is the naval infrastructure to support ashore requirements. Once NMCI was implemented, it became apparent that to manage IT infrastructure, return on investment had to be a priority. Applying an engineering discipline across IT is critical to obtain return on investment.

Business IT makes up one of the pillars of FORCEnet. Business IT is part of our net-centric organization on par with other tactical systems. The FORCEnet Engineering Conference is one of the venues where the FORCEnet business IT team can collaborate to determine how to accomplish this work.

CHIPS: What are your next planned activities to execute the vision for FORCEnet?

Rear Adm. Rodriguez: The FORCEnet Engineering Conference allows us to continue building a collaborative environment for key Naval engineering communities where challenges, issues and information can be exchanged impacting the direction for FORCEnet.

I am excited about future conferences, like this one, for communities, such as command and control (C2); communications; networks; business IT; intelligence surveillance and reconnaissance (ISR); information operations (IO); assessment and experimentation; human systems; and architecture and certifications systems, to exchange information and provide us the opportunity to adjust our focus as these communities grow and learn.

We're allowing working-level engineers and operators to join together in a structured forum with program offices, resource sponsors and users to freely exchange needs, desires and ideas.

As with any such event, we will learn from what we've done this time and make future conferences better and better over the next few years. **CHIPS**